

LISTING OF THE CLAIMS

A complete listing of the claims is provided below. This listing of claims will replace all prior versions and listings of claims in the application.

1. (Currently Amended) An impeller ~~blade~~ for use in a mixing vessel, comprising:
an inner blade portion angled in a first direction having a leading edge that is generally straight;
an outer blade portion disposed radially outward from the inner blade portion, said outer blade portion having a leading edge that is generally straight; and
a connector element that provides radial spacing between respective inner and outer blade portions,
wherein at least one of said inner blade portion and said outer blade portion is twisted.
2. (Cancelled).
3. (Cancelled).
4. (Original) An impeller according to claim 1, wherein the inner blade portion is twisted, and the outer blade portion is twisted.
5. (Original) An impeller according to claim 1, wherein the connector is a cylindrical rod.

6. (Currently Amended) An impeller for use in a mixing vessel, comprising:
 - a hub;
 - at least two inner blade portions disposed radially outward from the hub and angled in a first direction each having a leading edge that is generally straight;
 - at least two outer blade portions disposed radially outward from respective inner blade portions, said outer blade portions each having a leading edge that is generally straight; and
 - at least two ~~a~~ connector elements that each provide radial spacing between respective inner and outer blade portions,
wherein at least one of said at least two inner blade portions and said at least two outer blade portions is twisted.
7. (Currently Amended) An impeller according to claim 5 6, wherein the at least two inner blade portions are twisted.
8. (Currently Amended) An impeller according to claim 5 6, wherein the at least two outer blade portions are twisted.
9. (Currently Amended) An impeller according to claim 5 6, wherein the at least two inner blade portions are twisted, and the outer blade portions are twisted.
10. (Currently Amended) An impeller according to claim 5 6, wherein ~~the connector is a~~ said at least two connector elements are cylindrical rods.

11. (Currently Amended) An impeller for use in a mixing vessel, comprising:
at least two inner blade portions angled in a first direction each having a leading edge that is generally straight;
at least two outer blade portions disposed radially outward from respective inner blade portion, said outer blade portions each having a leading edge that is generally straight; and
means for providing radial spacing between respective inner and outer blade portions,
wherein at least one of said at least two inner blade portions and said at least two outer blade portions is twisted.

12. (Cancelled).

13. (Cancelled).

14. (Original) An impeller according to claim 11, wherein the inner blade portions are twisted, and the outer blade portions are twisted.

15. (Currently Amended) An impeller according to claim 11, wherein the means for providing radial spacing connector is a cylindrical rod.

16. (Currently Amended) A method for mixing material liquid in a mixing vessel using an impeller, the method comprising the steps of:

forcing the material liquid in a first direction using a first blade disposed radially outwardly from a hub, wherein the first blade has a generally straight leading edge; and

forcing the ~~material~~ liquid in a second direction opposite to the first direction using a second blade that is disposed radially outward from the first blade with a radial space provided between the first and second blades, wherein said second blade has a generally straight leading edge,

wherein at least one of said first blade and said second blade is twisted.

17. (Cancelled).

18. (Cancelled).

19. (Cancelled).

20. (Cancelled).

21. (New) A method according to claim 16, wherein said first blade comprises an inner portion angled at a first direction and an outer portion angled at a second position.

22. (New) The method according to claim 21, wherein said first blade comprises an inner portion angled at a first direction and an outer portion angled at a second position.

23. (New) The method according to claim 21, wherein said inner portion is twisted.

24. (New) The method according to claim 21, wherein said outer portion is twisted.

25. (New) The method according to claim 21, wherein said inner and outer portions are both twisted.

26. (New) The impeller according to claim 1, wherein said inner portion and said outer portion are each twisted.

27. (New) An impeller for use in a mixing vessel, comprising:
an inner blade portion comprising a first generally planar inner blade portion and a second generally inner blade portion at an angle to said first generally planar blade portion;
an outer blade portion disposed radially outward from the inner blade portion, said outer blade portion comprising a first generally planar outer portion and a second generally outer blade portion at an angle to said first generally planar outer portion; and
a connector element that provides radial spacing between respective inner and outer blade portions.

REMARKS

PRIORITY

The application transmittal form inadvertently claimed priority to Provisional Patent Application No. 60/244,922, which is not related to the present application. Applicant does not wish to claim the benefit of an earlier filing date under 35 U.S.C. 119 and the indication of such claim on the transmittal was merely a typographical error. No further explanation is believed necessary.

STATUS OF THE CLAIMS

CLAIM OBJECTIONS

The preambles of claims 1 and 18 have been amended in accordance with the Examiner's suggestion to correct the minor typographical errors. Claim 6 has been amended to remove the recitation of "a" at line 7, as requested by the Examiner.

The above-described amendments to claims 1, 6 and 18 are merely formal in nature and not related to patentability. Applicant respectfully requests that the objections to claims 1, 6 and 18 be withdrawn.

Claims 1-20 are pending. Claims 2, 3, 12, 13 and 17-20 have been cancelled without prejudice or disclaimer. Applicant reserves the right to pursue the subject matter of these claims in this or another application. Claims 21-27 have been added. Support for these claims can be found in the specification as filed.

Claim 1 has been amended to recite that the inner blade portion and the outer blade portion each have a leading edge that is generally straight. Claim 1 has been additionally amended to recite that at least one of the inner blade portion and the outer blade portion is twisted. Similarly, claims 6 and 11 have been amended to recite that each of the at least two

inner blade portions and each of the at least two outer blade portions have a leading edge that is generally straight. Claims 6 and 11 have been further amended to recite that at least one of the at least two inner blade portions and the at least two outer blade portions is twisted. Claim 16 has been amended to delete “material” and recited “liquid” in lines 1, 3 and 4, respectively. Claim 16 has been further amended to recite that the first blade and second blade each have a generally straight leading edge and that at least one of the first blade and the second blade is twisted.

Accordingly, no new matter has been added by these amendments and no estoppels are intended thereby.

Reconsideration and withdrawal of the outstanding rejections is respectfully requested in view of the following remarks.

OFFICE ACTION

REJECTIONS UNDER 35 U.S.C. § 112, SECOND PARAGRAPH

Claims 7-9, 15 and 17-20 stand rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctively claim the subject matter which Applicant regards as the invention. Applicant respectfully traverses this rejection.

Taking into account the Examiner’s comments and suggestions in the Office Action, claims 7-9, 15 and 17-20 have been amended as indicated in the *Listing of Claims* section of this Response and Amendment. It is believed that these amendments overcome the § 112 rejections to the respective claims. Accordingly, Applicant respectfully requests that these § 112 rejections be withdrawn.

DOUBLE PATENTING

Claim 10 has been amended to depend from claim 6 rendering the double patenting rejection moot. The dependency of claim 10 from claim 1 as originally filed was a typographical error and therefore the amendment to claim 10 is merely formal in nature and not material to patentability.

REJECTIONS UNDER 35 U.S.C. § 102(b)

(1) Claims 1-4, 6-9, 11-14 and 16-19 stand rejected under 35 U.S.C. § 102(b) as being anticipated by German Reference (DE 1,101,113). Applicant respectfully traverses this rejection.

Applicant notes that a claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference. (quoting *Verdegall Bros. V. Union Oil Co. of California*, 814 F.2d 628, 631 (Fed. Cir. 1987)).

Without conceding the propriety of the prior art rejection, claims 2, 3, 12, 13, 17 and 18 have been cancelled rendering this rejection moot with respect to these claims. As previously, mentioned, claim 1, and therefore dependent claim 4, recite that the inner blade portion and the outer blade portion each have a leading edge that is generally straight. Similarly, claim 6, and therefore dependent claims 7-9 recite inner blade portions and outer blade portions that each include a leading edge that is generally straight. Claim 16, and therefore dependent claims 17 and 18, recite that the first and second blade each have a generally straight leading edge.

The German Reference fails to disclose this aspect of the claims with respect to the generally straight leading edge. In fact, the German Reference discloses inner and outer portions of a blade each having a rounded or pointed leading edge. See for example, Figures 1 and 2 of the German Reference. Accordingly, Applicant respectfully submits that each and every element

as set forth in the claims 1-4, 6-9, 11-14 and 16-19 is not disclosed in the German Reference and therefore these claims are not anticipated. It is thus respectfully requested that this rejection to claims 1-4, 6-9, 11-14 and 16-19 be withdrawn.

REJECTIONS UNDER 35 U.S.C. § 103(a)

(1) Claims 5, 10 and 20 stand rejected under 35 U.S.C. § 103 (a) as being allegedly unpatentable over the German Reference in view of knowledge of the skilled man or in view of Tielens et al. (U.S. Patent No. 4,238,159).

To establish a *prima facie* case of obviousness, the prior art references must teach or suggest all of the claim elements. M.P.E.P. § 2143. There must also be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to combine the references. *Id.* Applicant respectfully submits that these criteria for obviousness have not been satisfied.

Without conceding the propriety of the rejection, claim 20 has been cancelled rendering this rejection moot. Claim 5 depends from claim 1 and therefore recites that the blade portions each have a generally straight leading edge *and* that at least one of the blade portions is twisted. Claim 10 depends from claim 6 and therefore recites that the two inner blade portions each have a generally straight leading edge and the two outer blade portions each have a generally straight leading edge *and* that at least one of the two inner blade portions and the at least two outer blade portions are twisted.

With respect to teaching or suggesting all of the elements of claims 5 and 10, neither the German reference nor the Tielens reference recite *both* a generally straight leading edge *and* a twisted blade portion. Moreover, the Examiner has pointed to nothing that would suggest a person skilled in the art would be motivated to combine the teachings of the German Reference

with the teachings of Tielens et al. In fact, Tielens discloses an apparatus for mixing solids and nowhere does it suggest utilizing it to mix liquids. Therefore, it is respectfully submitted that the criteria for obviousness have not been satisfied and this objection to claims 5, 10 and 20 should be withdrawn.

ADDITIONAL REMARKS

Claims 21-27 have been submitted for consideration. Claims 21-25 depend directly or indirectly from independent claim 16 while claim 26 depends from independent claim 1. Claim 27 recites an inner blade portion comprising a first generally planar inner blade portion and a second generally inner blade portion at an angle to said first generally planar blade portion; and an outer blade portion disposed radially outward from the inner blade portion, said outer blade portion comprising a first generally planar outer portion and a second generally outer blade portion at an angle to said first generally planar outer portion. Support for these claims can be found in the original application as filed. It is believed that the references cited do not teach or suggest these features of claim 27. Consideration and allowance of claims 21-27 is respectfully requested.

In view of the foregoing, reconsideration and allowance of the application are believed in order, and such action is earnestly solicited.

Should the Examiner believe that a telephone conference would expedite issuance of the application, the Examiner is respectfully invited to telephone the undersigned attorney at 202/861-1714.

Respectfully submitted,

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